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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,502	05/14/2002	Olli Salmela	4925-193PUS	2169

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EXAMINER
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LEE, BENNY T

ART UNIT	PAPER NUMBER
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2817

DATE MAILED: 02/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.



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FILED DATE:

10/030, 502

APR 17

1993

☐ This application has been examined ☒ Responsive to communication filed on 31 Oct 2003 ☒ This action is made final.

A shortened statutory period for response to this action is set to expire Three (3) month(s), 30 days from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- |   |   |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice re Patent Drawing, PTO-948.                  |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449.      | 4. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152 |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474.     | 6. <input type="checkbox"/> _____   |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-20 are pending in the application.  
Of the above, claims \_\_\_\_\_ are withdrawn from consideration.
2. ☐ Claims \_\_\_\_\_ have been cancelled.
3. ☒ Claims 18-20 are allowed.
4. ☒ Claims 1-7, 11-13, 16 are rejected.
5. ☒ Claims 8, 9, 15, 17 are objected to.
6. ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on \_\_\_\_\_. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on \_\_\_\_\_, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☒ The proposed drawing correction, filed 31 Oct 2003, has been ☒ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. \_\_\_\_\_, filed on \_\_\_\_\_.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

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The disclosure is objected to because of the following informalities: In the replacement paragraph to page 4, line 20, note that "figure 1 shows an ..." should be rephrased as --Figure 1 shows a--. Page 10, line 15, note that --( $\lambda/4$ )-- should follow "quarter-wave" for consistency of description. Appropriate correction is required.

The disclosure is objected to because of the following informalities: Note that the following reference labels appearing in the corresponding drawings need explicit description therewith: figs. 2, 3 (" $\epsilon_r$ " for the core region); fig. 4 (" $\epsilon_r$ " for the strip lines); figs. 5a-5c, 6a, 6b (" $\epsilon_r$ " in general). Appropriate correction is required.

Applicants' comments regarding " $\epsilon_r$ " have been noted. The examiner suggests that applicants' provide a statement in the specification that " $\epsilon_r$ " denotes the quantity "permittivity" through all the drawing figures, as a means of obviating this objection.

Claims 12, 13 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 12, it is unclear where support in the original specification can be found for the claimed limitation that "most of the ceramic" has the "same permittivity".

In claim 13, note that it is unclear whether the original specification provides support for "partly gridded" planes of conductive material.

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However, if applicants' do not believe that these limitations cited are "new matter", then an appropriate explanation is required, including pointing out where in the original specification support for these limitations can be found.

Claims 12, 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 12, note that it is unclear, even in light of the specification, what scope of coverage is encompassed by the modifier "most".

In claim 16, note that reference to "a remaining portion" does not make sense absent the recitation of the ceramic material being segmented between an original portion and "a remaining portion". Clarification is needed.

The following claims have been found objectionable for reasons set forth below:

In claim 1, last paragraph, note that "conductive first and second planes" should be rephrased as --first and second conductive planes-- at each occurrence for clarity of description.

In claim 3, first paragraph, note that --permittivity-- should be inserted between "corresponding" and "value" for a proper characterization.

In claims 5, 6, note that "made" should be rewritten as --disposed-- at each occurrence.

In claim 8, note that "one of ... or" should be rephrased as --one of ... and-- for a proper characterization.

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In claim 18, line 8, note that --same-- should precede "permittivity" for a proper characterization.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 10-12; 3 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Elco.

The Elco reference (Fig. 1) discloses a waveguide integrated circuit units including a structure which includes a high-dielectric constant "core" portion (e.g. 122) extending in a longitudinal (i.e. a "z") direction. The "core" also includes cross-sectional dimensions (i.e. horizontal or "x" direction and a vertical or "y" direction. Note that adjacent both of the edges of the "core" portion (e.g. 122) are low-dielectric constant air portions (126) extending the full length of the waveguide along the "z"-direction and thus forming discontinuities at the interface therebetween. As described with respect to Fig. 15B, the high-dielectric constant portion (122) serves as the wave propagating area (i.e. in a TE mode of propagation). Furthermore, note that

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planar conductive electrode films (124U, 124L) cover the "core" portion (3) at top and bottom regions thereof along the x-z plane of the waveguide structure, thereby disposing the conductive layers (124U, 124L) "between" the air portions (126).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 14; 4, 5, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elco in view of the EP ('328) publication (of record).

As disclosed in the Elco reference (fig. 15), note that the air cavities are inherently are oriented along the interface (i.e. y-z planes). However, the Elco does not disclose the "core"

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portion having y-axis oriented conductive via-holes and does not disclose the use of a hole and probe waveguide excitation system.

As disclosed in the EP ('328) publication, at fig. 1 thereof, a dielectric waveguide includes a high-dielectric constant propagating region (5) which is electrically isolated from adjacent non-propagating regions by rows of conductive vias (4) at respective interfaces between propagating region (5) and the regions adjacent thereto aligned along the longitudinal/propagating direction of the propagating region (5). Moreover, as disclosed with respect to Figs. 5 and 6, signal coupling is effected by a hole in upper conductive layer (2) through which a probe/antenna (52/62) protrudes through to propagate signal energy in propagating region (5).

Accordingly, it would have been obvious in view of the references, taken as a whole to have: 1) added conductive vias along the interface of the "core" region of the Elco reference; and 2) provide a hole and coupling probe as the waveguide coupling structure in the Elco reference.

Such modifications would have been obvious since: 1) the addition of conductive vias along the propagating/non-propagating interface of the Elco would have provided the advantageous benefit of additional isolation between the propagating "core" (122) and the adjacent non-propagating portion (126) in the Elco reference, thereby suggesting the obviousness of such a modification; and 2) the generic nature of the waveguide coupling in the Elco reference would have been suggested that any equivalent waveguide coupling (i.e. a hole and probe

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coupling as taught by the EP ('328) publication) would have been usable therewith, thereby suggesting the obviousness of such a combination.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over the Elco reference in view of King (of record).

As described above, the Elco reference meets the claimed invention except for the loop probe extending through a hole in the waveguide.

King (fig. 40) discloses that the use of loop probes passing through a hole in a waveguide is conventional in the art.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have provided a loop probe waveguide coupling as taught by King as the waveguide coupling in the Elco reference. Such a modification would have been obvious since the generic nature of the waveguide coupling in the Elco reference would have suggested that any equivalent waveguide coupling (i.e. the loop probe in King) would have been usable, thereby suggesting the obviousness of such a modification.

Claims 8, 9, 15, 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 18-20 are allowable over the prior art of record.



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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benny Lee whose telephone number is (571) 272 1764.



BENNY T. LEE  
PRIMARY EXAMINER  
ART UNIT 2817

B. Lee

January 23, 2004